STAT 450 SYLLABUS
Fall 2015

STAT 450 Senior Capstone Project is the senior capstone course for undergraduate majors in statistics. Statistics students in their senior year (or junior with adequate preparation) are required to take at least 3 credit hours of STAT 450, either the fall or spring semester. An additional semester may be taken and would count as a group O elective. The course will consist of 2-person teams working on different projects under the guidance of a mentor/supervisor and will require both a written paper and a poster presentation.

Teams: Each project will be conducted by two senior statistics majors enrolled in STAT 450. The team may be a part of a larger research effort outside the statistics department. For example, you might be part of a mechanical engineering team that has a need for statistical analysis of a data set.

Projects: The only requirement of the project is that it deals with statistics and/or probability. Most teams will opt to analyze a data set as their project, but there are other possibilities: a simulation study; developing an R package; a theoretical investigation; developing new visualization methods; writing a publishable review paper on some area of statistics; investigating a new teaching method for introductory statistics (e.g., using modern media and/or internet resources). If analyzing a data set, there must be one or two substantive questions that are addressed by the analysis. A subject-matter mentor can suggest relevant questions. It is important to bear in mind that *the project should reflect your overall statistical training and something much more mature than an end-of-semester course project. The project must involve statistical methods beyond exploratory data analysis (summary statistics and plots).*

Mentoring: Each team must have a designated *statistical* mentor. The statistical mentor may be from outside the statistics department if he/she is able to provide suitable statistical guidance. An advanced graduate student (beyond qualifying exams and working on a dissertation) may serve as a statistics mentor with approval from the course instructor after an interview. Although not required, you are strongly encouraged to also have a subject matter mentor if the statistics mentor does not have expertise in the given area of application. Teams must meet with their statistical mentor at least four times throughout the semester according to a published timeline for the given semester. All students will give an update of their mentor meetings at the Wednesday class meetings.

Class Meetings: The class will meet weekly, Wednesday 4:00-5:30pm. Each meeting a few teams will be assigned to give a formal update report of their work.

Requirements: Students are required to write a project report and participate in a poster presentation of their work. This may be a poster or oral presentation depending on suitable outlets in the given semester.

Grade: Your final grade will be based on the report and poster, 50% each. Team members are expected to contribute equally to the project in which case each member will receive the same grade. The instructor reserves the right to adjust this policy under situations deviating from these expectations.

A panel of statistics faculty will grade the reports and poster presentations. Project mentors will not grade their own teams, but they should provide advice and/or guidance on the poster and report.

Fall 2015 Time Line

1. **Sep 9,** Wednesday, 4pm: Deadline for first mentor meeting. Submit an email summarizing your meeting. Be prepared to discuss in class.

2. **Sep 11,** Friday, 11:59pm: Project description. See Owl Space for sample proposals.

   Submit by email a brief report including the following items.

   (a) Project title, including project member names and mentor(s).

   (b) Project summary, including the specific aims/hypotheses of the project.

   (c) Data description and status. If you do not have your data, please indicate your plans for obtaining the data, including a date and resources.

   (d) Initial plans for statistical analysis. Your analysis must include aspects of statistical inference or reasons why this is not relevant. I understand that your analysis plans may be tentative but you should have some idea of how the data could be analyzed.

3. **Sep 23**, Wed, 4pm: *Firm deadline* for **data availability**. Email summary. If data are not available by this date, then the instructor will have the discretion to assign a project to the team.

4. **Oct 9,** Friday, 5pm: Submit **report I** on initial analysis.

5. **Oct 14**, Wednesday, 4pm: Deadline for **second mentor meeting**. Email summary.

6. **Nov 6**, Friday, 5pm: Deadline for **third mentor meeting**. Email summary.

7. **Nov 13,** Friday, 5pm: Submit **report II** on current analysis.

8. **Nov 25**, Wednesday. 4pm: Deadline for **fourth/final mentor meeting**. Email summary. **No class this date**.

9. **Week of Nov 30-Dec 4 (TBA):** Statistics Department Poster Presentation

10. **December 16,** Wednesday, 11:59pm: **Final Report** Due. See Owlspace for sample reports.